Sustainable Futures P2 Assessment for SHL003

This PMN Submission is the subject of a P2 Assessment for participation in the Sustainable Futures Initiative. The P2 assessment of Hydrocarbons, C11-16, branched and linear, with CAS RN 1809170-78-2, referred to as SHL003 in the assessment, directly follows this cover letter. Additional model outputs and methods for all the P2 framework tools used in this assessment can be provided upon request.

SHL003 is an inherently low hazard substance. Extensive testing of similar GTL Solvent mixtures has shown little to no human health effects for the substances. In addition, aquatic effects testing has shown that similar alkyl mixtures with alkyl ranges of C10 and greater show low acute and chronic effects to the aquatic environment.

These results are collected in a summary reference below and attached to the PMN; they also cover previous PMNs, including P-14-132 to P-14-137, that showed for both human health and ecotoxicity concerns, EPA concurs that the hazard levels were low for alkyl ranges consisting of C10 or greater. Based on this, SHL003 is predicted to have a low human health cancer and non-cancer hazard concerns, as well as low aquatic toxify hazard concerns.

SHL003 is predicted to partition primarily to air and soil, where it will have a low concern for persistence, with an environmental half-life of <2 days in air and <60 days in all other media

The conclusion of the SHL003 aquatic risk assessment is that, based on low hazard, there is a low potential for risk to the aquatic environment.

The conclusion of the SHL003 occupational and general population risk assessments is that, based on low hazard predicted for the substance, there is a low potential for risk to human health.

It should be noted that this risk assessment does not take PPE and other exposure controls into account when determining exposure and risk. These factors would further reduce the potential for risk from this substance. It is our opinion that based on this assessment of the chemical and information included in the PMN submission and manufacturer's MSDS, including use of appropriate PPE and exposure controls, SHL003 will not pose an unreasonable risk to human health or the environment.

Sustainable Futures

Summary Assessment

Using

P2 Framework Models

This document was developed to help compile estimation results from U.S. EPA OPPT's P2 Framework Models and is used by OPPT during Sustainable Futures (SF) training described on the US EPS Sustainable Futures homepage at: http://www.epa.gov/oppt/sf/. Participants in the voluntary SF Pilot Project are asked to submit the information contained in this assessment along with their SF PMNs in their choice of format.

Use of this specific format is not mandatory.

Chemical Assessed:
Alkanes, C11-16 branched and linear

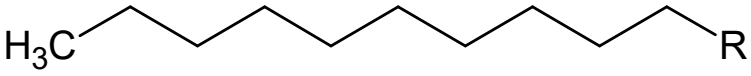
CAS Registry Number:
1809170-78-2

Participant Name:
Shell Chemical LP

Date of Assessment:
05/23/2016

Record ID: SHL003	**Submitter:** Shell Chemical LP

Chemical Structure



R = C1 to C6 alkyl

MW: 198.35 for C14

MF: C14H30 for C14

Physical Form: liquid

CAS RN: 1809170-78-2

Trade Name: GS1927

Use: Multiple

Production Volume: 63,500,000 kg

SMILES: CCCCCCCCCCCCCC [C14 linear alkyl]

Name: Alkanes, C11-16 branched and linear

Synonyms: GS1927

SUSTAINABLE FUTURES SUMMARY:

Concern Level	**HIGH**	**MODERATE**	**LOW**
Persistence			**X**
Bioconcentration		**X**	
Non-Cancer Health Hazard			**X**
Cancer Health Hazard			**X**
Aquatic Toxicity Hazard			**X**
Is the chemical predicted to be a PBT by PBT Profiler?	Not run in PBT Profiler		
Overall Hazard Concern	**Human Health Hazard:** Low **Aquatic Hazard:** Low		
Overall Risk	**Human Health Risk:** Low **Aquatic Risk:** Low		

Record ID: SHL003	**Submitter:** Shell Chemical LP
PHYSICAL/CHEMICAL PROPERTIES:	
Melting Point (deg C)	<20 Deg
Boiling Point (deg C)	Range based on distillation
Boiling Point Pressure (mm Hg)	N/A
Vapor Pressure (mm Hg)	0.14 by analogy to C12 and 0.012 by analogy to C14 (EPI Database)
Water Solubility	0.0037 mg/L by analogy to C12 (EPI Database)
Log K_{ow}	>8.2 by analogy to C12 and above (EPI Database)
ENVIRONMENTAL TRANSPORT AND FATE:	
Transport	
Henry's Law Constant – HLC (atm-m^3/mol)	27 by analogy to C14 (EPI v4.11)
Soil Adsorption Coefficient – Log K_{oc}	4.2 by analogy 10 C14 (EPI v4.11)
Bioconcentration Factor – BCF	120 -2688 (EPI v4.11)
Persistence	
Experimental Biodeg Tests	>70% in 28-days, and meets the 10-day window, by analogy to GS215 (GTL USA 2016)
Probability of Rapid Biodegradation	Will biodegrade rapidly (EPI v4.11)
Ultimate Biodeg Model	Days by analogy to C14 >70% by analogy to GS215
Primary Biodeg Model	Days by analogy to C14 (EPI v4.11)
Ready Biodegradability	Ready biodegradable, by analogy to C14 (EPI v4.11)
Atmospheric Half-life	0.6 days by analogy to C14 (EPI v4.11)
Hydrolysis Half-life	No hydrolysable groups
Volatilization Half-life for Model River	1.4 hours by analogy to C14 (EPI v4.11)
Volatilization Half-life for Model Lake	5.5 day by analogy to C14 (EPI v4.11)
Removal in Sewage Treatment Plant	99% POTW Removal by analogy to similar GTL Solvents (GTL USA 2016)
Byproducts	
Degradation Products	
Metabolites	

Record ID: SHL003	**Submitter:** Shell Chemical LP
ECOTOXICITY:	
ECOSAR Class	ECOSAR Not Use; Ecotoxicity based on read across from similar GTL Solvents (GTL USA 2016)
Acute Toxicity	
Fish LC_{50}	96h-LL50 >100 mg/L; NOELR = 100 mg/L WAF by analogy to GS215 (GTL USA 2016)
Daphnid LC_{50}	48h-EL50 >100 mg/L; NOELR = 100 mg/L WAF by analogy to GS190 (GTL USA 2016)
Green Algae EC_{50}	72h-EL50 >100 mg/L; NOELR = 100 mg/L WAF by analogy to GS190 (GTL USA 2016)
Chronic Toxicity	
Fish ChV	NOELR ≥100 mg/L WAF by analogy to GS190 (GTL USA 2016)
Daphnid ChV	NOELR ≥100 mg/L WAF by analogy to GS170(GTL USA 2016)
Green Algae ChV	NOELR = 100 mg/L WAF by analogy to GS190 (GTL USA 2016)
Overall Aquatic Toxicity Hazard Concern	Low
NON-CANCER HEALTH EFFECTS:	
Acute Toxicity	Low, >5,00 mg/kg Oral LD50 and >2,000 mg/kg Dermal LD50 by analogy to similar GTL Solvents (GTL USA 2016)
Irritation	Not irritating to skin or eyes by analogy to similar GTL Solvents (GTL USA 2016)
Skin Sensitizer	Not sensitizing by analogy to similar GTL Solvents (GTL USA 2016)
Reproductive Effects	Low, by analogy to similar GTL Solvents, NOAEL of >750 mg/kg-day (highest dose tested) (GTL USA 2016)
Developmental Effects	Low, by analogy to similar GTL Solvents, NOAEL of >866 mg/kg-day (highest dose tested) (GTL USA 2016)
Neurotoxicity and Immune System Effects	No data available
Genotoxicity	Not genotoxic by analogy to similar GTL Solvents (GTL USA 2016)
Mutagenicity	Not mutagenic by analogy to similar GTL Solvents (GTL USA 2016)
Systemic Effects	Low, by analogy to C8 to C24 GTL Solvents; little or no effects observed in multiple dosing scenarios (GTL USA 2016)
Overall Human Health Non-Cancer Hazard Concern	Low
CANCER HEALTH EFFECTS:	
Experimental data	Not Carcinogenic by analogy to similar GTL Solvents (GTL USA 2016)
OncoLogic Results	No SAR for Oncologic Evaluation
Overall Human Carcinogenicity Hazard Concern	Low

Record ID: SHL003		**Submitter:** Shell Chemical LP	
INDUSTRIAL OPERATIONS INFORMATION:			
Operation Name	Import	**Number of Sites**	1
Location	Channelview TX	**Operating Days Per Year**	300

INDUSTRIAL RELEASE SUMMARY:

Release source	Daily Release (kg/site-day)	Release Days per Year	No. of Sites of Release	Total Release (kg/year -all sites)	Media, Release Site Information and Control Efficiency
Loading to drums	0.005	300	1	1.6	Air
Loading to tank trucks	0.008	300	1	2.3	Air
Loading to rail cars	0.008	300	1	2.3	Air

OCCUPATIONAL EXPOSURE SUMMARY:

Route	Dose Rate	Days/yr	No. Workers	Cancer LADD	Chronic ADD	Acute APDR
Dermal	2,250 mg/day	250	1	23 mg/kg-day	22 mg/kg-day	32 mg/kg-day
Inhalation	112 mg/day	250	1	0.6 mg/kg-day	1.1 mg/kg-day	1.6 mg/kg-day
Total number of Workers – All Sites						

GENERAL POPULATION EXPOSURE SUMMARY:

	Cancer LADDpot	Chronic ADDpot	Acute ADRpot
Drinking Water			
Fish Ingestion			
Fugitive Emissions			
Incineration Emissions			
Landfill Leaching			
Dermal – Consumer Use			
Inhalation – Consumer Use			

Record ID: SHL003	**Submitter:** Shell Chemical LP

INDUSTRIAL OPERATIONS INFORMATION:

Operation Name	Import	**Number of Sites**	1
Location	Channelview TX	**Operating Days Per Year**	300

AQUATIC RISK ASSESSMENT

Acute Profile	**Endpoint**	**Effect Level (ppb)**	**Assessment Factor**	**Acute COC (ppb)**	**PEC (ppb)**	**Potential for Risk**
	Fish	Low hazard	N/A	N/A	0	Low
	Daphnid	Low hazard	N/A	N/A	0	Low
	Green Algae	Low hazard	N/A	N/A	0	Low

Chronic Profile	**Endpoint**	**Effect Level (ppb)**	**Assessment Factor**	**Chronic COC (ppb)**	**PEC (ppb)**	**Days of Exceedance**	**Potential for Risk**
	Fish	Low hazard	N/A	N/A	0	0	Low
	Daphnid	Low hazard	N/A	N/A	0	0	Low
	Green Algae	Low hazard	N/A	N/A	0	0	Low

HUMAN HEALTH RISK ASSESSMENT

	Hazard Concern	**NOAEL/ LOAEL (mg/kg-d)**	**Exposure Dose and Source (mg/kg-d)**	**MOE**	**Potential for Risk**
Occupational Risk	Low Hazard	N/A	N/A	N/A	Low
General Population Risk	Low Hazard	N/A	N/A	N/A	Low

AQUATIC RISK ASSESSMENT SUMMARY

Aquatic Risk Concerns for this Operation	Low

Basis for Concerns: Low based on low hazard

HEALTH RISK ASSESSMENT SUMMARY

Human Health Risk Concerns for this Operation	Low

Basis for Concerns: Low based on low hazard

Record ID: SHL003		**Submitter:** Shell Chemical LP	
INDUSTRIAL OPERATIONS INFORMATION:			
Operation Name	Processing for coatings use	**Number of Sites**	289
Location	Multiple	**Operating Days Per Year**	250

INDUSTRIAL RELEASE SUMMARY:

Release source	**Daily Release (kg/site-day)**	**Release Days per Year**	**No. of Sites of Release**	**Total Release (kg/year -all sites)**	**Media, Release Site Information and Control Efficiency**
Transport Drum cleaning	6.2	152	289	274,000	POTW; >90% removal
Processing vessel cleaning	1.3	250	289	91,300	POTW; >90% removal

OCCUPATIONAL EXPOSURE SUMMARY:

Route	**Dose Rate**	**Days/yr**	**No. Workers**	**Cancer LADD**	**Chronic ADD**	**Acute APDR**
Dermal	3,100 mg/day	250	289	17 mg/kg-day	30 mg/kg-day	44 mg/kg-day
Inhalation	0.23 mg/day	250	289	1.3E-3 mg/kg-day	2.2E-2 mg/kg-day	3.3E-3 mg/kg-day
Total number of Workers – All Sites						

GENERAL POPULATION EXPOSURE SUMMARY:

	Cancer LADDpot	**Chronic ADDpot**	**Acute ADRpot**
Drinking Water			
Fish Ingestion			
Fugitive Emissions			
Incineration Emissions			
Landfill Leaching			
Dermal – Consumer Use			
Inhalation – Consumer Use			

Record ID: SHL003		**Submitter:** Shell Chemical LP	
INDUSTRIAL OPERATIONS INFORMATION:			
Operation Name	Processing for coatings use	**Number of Sites**	289
Location	Multiple	**Operating Days Per Year**	250

AQUATIC RISK ASSESSMENT

Acute Profile	**Endpoint**	**Effect Level (ppb)**	**Assessment Factor**	**Acute COC (ppb)**	**PEC (ppb)**	**Potential for Risk**
	Fish	Low hazard	N/A	N/A	0	Low
	Daphnid	Low hazard	N/A	N/A	0	Low
	Green Algae	Low hazard	N/A	N/A	0	Low

Chronic Profile	**Endpoint**	**Effect Level (ppb)**	**Assessment Factor**	**Chronic COC (ppb)**	**PEC (ppb)**	**Days of Exceedance**	**Potential for Risk**
	Fish	Low hazard	N/A	N/A	0	0	Low
	Daphnid	Low hazard	N/A	N/A	0	0	Low
	Green Algae	Low hazard	N/A	N/A	0	0	Low

HUMAN HEALTH RISK ASSESSMENT

	Hazard Concern	**NOAEL/ LOAEL (mg/kg-d)**	**Exposure Dose and Source (mg/kg-d)**	**MOE**	**Potential for Risk**
Occupational Risk	Low Hazard	N/A	N/A	N/A	Low
General Population Risk	Low Hazard	N/A	N/A	N/A	Low

AQUATIC RISK ASSESSMENT SUMMARY

Aquatic Risk Concerns for this Operation	Low

Basis for Concerns: Low risk based on low hazard.

HEALTH RISK ASSESSMENT SUMMARY

Human Health Risk Concerns for this Operation	Low

Basis for Concerns: Low risk based on low hazard.

Record ID: SHL003				**Submitter:** Shell Chemical LP		
INDUSTRIAL OPERATIONS INFORMATION:						
Operation Name		Use-Multiple		**Number of Sites**		Multiple
Location		Multiple		**Operating Days Per Year**		
INDUSTRIAL RELEASE SUMMARY:						
Release source	**Daily Release (kg/site-day)**	**Release Days per Year**	**No. of Sites of Release**	**Total Release (kg/year -all sites)**	**Media, Release Site Information and Control Efficiency**	
Cleaning transport drums	4.4	160	196	137,000	POTW; >90% removal	
Equipment cleaning	1.9	250	196	91,000	POTW; >90% removal	
Misc sources from roll equipment cleaning	0.9	250	196	45,600	POTW; >90% removal	
OCCUPATIONAL EXPOSURE SUMMARY:						
Route	**Dose Rate**	**Days/yr**	**No. Workers**	**Cancer LADD**	**Chronic ADD**	**Acute APDR**
Dermal	7,700 mg/day	250	196	43 mg/kg-day	75 mg/kg-day	110 mg/kg-day
Inhalation	0.24 mg/day	250	196	1.4E-3 mg/kg-day	2.4E-3 mg/kg-day	3.5E-3 mg/kg-day
Total number of Workers – All Sites						
GENERAL POPULATION EXPOSURE SUMMARY:						
	Cancer LADDpot	**Chronic ADDpot**	**Acute ADRpot**			
Drinking Water						
Fish Ingestion						
Fugitive Emissions						
Incineration Emissions						
Landfill Leaching						
Dermal – Consumer Use						
Inhalation – Consumer Use						

Record ID: SHL003	**Submitter:** Shell Chemical LP

INDUSTRIAL OPERATIONS INFORMATION:

Operation Name	Multiple Uses	**Number of Sites**	Multiple
Location	Multiple	**Operating Days Per Year**	

AQUATIC RISK ASSESSMENT

Acute Profile	**Endpoint**	**Effect Level (ppb)**	**Assessment Factor**	**Acute COC (ppb)**	**PEC (ppb)**	**Potential for Risk**
	Fish	Low hazard	N/A	N/A	0	Low
	Daphnid	Low hazard	N/A	N/A	0	Low
	Green Algae	Low hazard	N/A	N/A	0	Low

Chronic Profile	**Endpoint**	**Effect Level (ppb)**	**Assessment Factor**	**Chronic COC (ppb)**	**PEC (ppb)**	**Days of Exceedance**	**Potential for Risk**
	Fish	Low hazard	N/A	N/A	0	0	Low
	Daphnid	Low hazard	N/A	N/A	0	0	Low
	Green Algae	Low hazard	N/A	N/A	0	0	Low

HUMAN HEALTH RISK ASSESSMENT

	Hazard Concern	**NOAEL/ LOAEL (mg/kg-d)**	**Exposure Dose and Source (mg/kg-d)**	**MOE**	**Potential for Risk**
Occupational Risk	Low Hazard	N/A	N/A	N/A	Low
General Population Risk	Low Hazard	N/A	N/A	N/A	Low

AQUATIC RISK ASSESSMENT SUMMARY

Aquatic Risk Concerns for this Operation	Low

Basis for Concerns: Low risk based on low hazard.

HEALTH RISK ASSESSMENT SUMMARY

Human Health Risk Concerns for this Operation	Low

Basis for Concerns: Low risk based on low hazard.

Record ID: SHL003	**Submitter:** Shell Chemical LP

SUMMARY CONCLUSIONS:

Occupational Risk:
Risk of Non-Cancer Acute Effects from Occupational Exposure: Low due to low hazard.
Risk of Non-Cancer Chronic Effects from Occupational Exposure: Low due to low hazard.
Risk of Cancer Effects from Occupational Exposure: Low due to low hazard.

General Population Risk:
Risk of Non-Cancer Acute Effects to General Population: Low due to low hazard.
Risk of Non-Cancer Chronic Effects to General Population: Low due to low hazard.
Risk of Cancer Effects to General Population: Low due to low hazard.

Aquatic Risk:
Acute Risk to the Aquatic Environment: Low due to low hazard.
Chronic Risk to the Aquatic Environment: Low due to low hazard.

Composition and Representative Structures

	%linear/%branched (% anticipated range)
Carbon #	**GTL GS1927**
10 or less	0.6/0.2 (<10)
11	5.3/4.8 (<15)
12	4.3/13.2 (10-25)
13	7.2/17.9 (10-30)
14	3.6/16.7 (15-30)
15	3.9/15.2 (10-30)
16	0/7.1 (2-15)
17 or more	0/0 (<5)

Physical Property and Environmental Fate

SHL003 environmental fate assessment is based on the read-across from similar GTL solvents, data available for representative alkyl length components, and EPI Suite estimation. The specific end points and sources are listed in the tables above. Overall, SHL003 is a volatile, hydrophobic hydrocarbon solvent. The substance is expected to exist as a vapor in the atmosphere, where it will have a half-life of 0.6 days. The substance is predicted to have 99% removal in POTW, through a combination of air stripping, sludge adsorption, and biodegradation; EPA has evaluated similar compounds and found the same conclusion. In the environment, SHL003 is expected to be rapidly biodegraded, based on data for similar GTL solvents.

If released to the environment, SHL003 is expected to partition to air and soil, where it will have a low overall concern for persistence.

Aquatic Hazard

This table has been prepared to provide an overview of the environmental hazard profile of Shl003 and is based on available experimental data for other GTL Solvents. As shown in Figure 1, due to the sequential distillation process, SHL003 is a precursor to solvents GS190, GS215 and GS250, all of which have been listed on TSCA. This provides a strong case for read-across of data from these solvents to SHL003. For clarity, the composition of GS1927 is compared with GS190, GS215, and GS250 in Table 2. This demonstrates that these products span the full carbon range of GS1927, and that the same types of molecules are present in each of these products. The data available for supporting substances are appropriate and sufficient to fully characterize the endpoints for GS1927.

Table 2: Composition of Shell GTL solvents GS190, GS215, GS250, and GS1927

	% Linear/% Branched (% anticipated range)			
Carbon #	**GTL GS190**	**GTL GS215**	**GTL GS250**	**GTL GS1927**
10 or less	3.2/3.0 (5-10)			0.6/0.2 (<10)
11	8.1/19.7 (20-35)	1.1/1.4 (<5)		5.3/4.8 (<15)
12	7.0/39.7 (40-55)	4.0/10.3 (10-25)		4.3/13.2 (10-25)
13	0.7/17.7 (10-25)	7.5/29.1 (30-45)	1.2/1.5 (<5)	7.2/17.9 (10-30)
14	0/0.9 (<5)	4.4/33.8 (30-45)	8.8/15.6 (15-30)	3.6/16.7 (15-30)
15		0.1/8.2 (5-15)	8.9/44.7 (45-60)	3.9/15.2 (10-30)
16		0/0.1 (<5)	0.5/18.5 (10-25)	0/7.1 (2-15)
17 or more			0/0.3 (<5)	0/0 (<5)

The bioavailability of the GTL products is limited by their water solubility due to their long carbon chain length and relatively simple branching. While no experimental data is available for the specific PMN substance GS1927, there is data on the related GTL solvents that either compose GS1927 or are close in carbon range. In all studies, no adverse effects were observed at the highest loading rates tested in water-accommodated fractions (WAFs), which was 100 mg/L. The acute toxicity tests showed the LL_{50} for fish, EL_{50} (daphnia), and ErL50 (algae) were >100 mg/L. There were also no sublethal effects observed in fish, daphnia, and algae chronic toxicity tests with GS170 and GS190, which have shorter carbon chain lengths. Since GS170 and GS190 are lighter, more water-soluble cuts, with smaller average carbon chain length, their toxicity tests are considered to give a conservative result for read-across to GS1927. All testing has been GLP certified.

Based on data for related GTL solvents, it can be concluded that GS1927 is not acutely or chronically toxic to aquatic organisms.

Human Health Non-Cancer and Cancer Hazards

Please see Shell GTL Solvents GS1927 and GS2735 notification Expert human health hazard assessment support document, attachment to PMN with test results for similar GTL Solvents, for a comprehensive review of study data for similar GTL Solvents and Fractions (GTL USA 2016).

Release and Exposure Sources

SHL003 will be imported at 100% in tankers from Europe and unloaded to feed tanks at Boasso America Corp in Channnelview TX. SHL003 Will be transferred to railcars, tank trucks and isotanks with the majority of containers dedicated and requiring no cleaning. A second storage location for isotanks is in Linden, New Jersey. SHL003 will be used in formulating coatings (25%) cleaning fluids (9.5%), agrochemical production (3.2%), metal working fluids/rolling oils (8.9%) and sold as an intermediate (53.4%). As a worst case scenario, activities modeled include loading SHL003 into tank trucks, rail cars and drums.

25% of SHL003 is processed to approximately 70% for use as a cured coating. Based on EPA modeling scenarios for similar activities, the coating is unloaded from drums and used at 289 sites over 250 days in batches of 520 kg/batch. Modeled activities include unloading and cleaning transport drums, vessel cleaning and filter media change out. 12.5% of the PMN substance is used as a roll coating at 196 sites over 250 days at 70% concentration. Modeled activities include unloading and cleaning transport drums, equipment cleaning, roll coating and misc. sources from roll equipment cleaning.

9.5% of SHL003 is processed to 5% for use as a cleaning fluid. Based on EPA modeling scenarios for similar activities, the substance is processed into the formulation over 250 days and 11,520 kg/site, and loaded to drums. 6% of the PMN is for non-consumer/industrial/commercial use over 250 days, at a final concentration of 2.5% at 75,600 sites. Average use is 10 kg/site/day with 97% expected release in wash water.

3.2% of SHL003 is processed to 45% at 1 site over 250 days for use as an agrochemical. Modeled activities include unloading trucks, and large vessel cleaning.

8.9% of SHL003 is shipped in tank trucks and processed to 35% at 267 sites then shipped in drums for use as a metal working/rolling oil fluid. Use takes place at 13,522 sites. Modeled activities using the metalworking default scenario operation.

53.4% of SHL003 is processed for use as a chemical intermediate. Processing at 16 sites over 250 days in 20,000 kg batches. Modeled activities is only for unloading tank trucks.

The table above show potential releases and exposures for the initial transfer operation, as well as worst case scenario release and exposure scenarios for selected modeled operations.

Environmental (Aquatic) Risk Assessment

Assessment of aquatic risk is based on comparison of the concentration of the chemical in the environment, referred to as the predicted environmental concentration (PEC), to any acute and/or chronic concentrations of concern (COCs) established for the chemical. Acute risk potential is determined by direct comparison of the PEC to an acute COC, with the potential for risk being indicated if the PEC is larger than the acute COC. Chronic risk is determined both by comparison of the PEC to the chronic COC, similar to the acute risk assessment, and by E-FAST estimation of the number of days the PEC will exceed the chronic COC, with risk potential indicated if the PEC exceeds the chronic COC for 20 days or more.

Risk is a function of hazard and exposure; if the hazard concern level is low, then the risk should generally be low. SHL003 has been predicted to have low overall ecotoxicity hazard concerns. Based on this, the potential for risk to aquatic environment is also predicted to be low.

Overall, based on low hazard, SHL003 is expected to pose a low potential for risk to the aquatic environment.

Human Health Risk Assessment

Human health risk potential is established by comparison of the potential health effect levels to the occupational and general population dose rates estimated for the chemical. The health effect is divided by the largest dose rate for either occupational or general population exposure to give a margin of exposure (MOE). Acute risk is only evaluated if the acute LD_{50} is found to be <50 mg/kg. Chronic risk is evaluated for each effect level identified in the human health hazard assessment that has a moderate or greater hazard concern. The magnitude of the MOE determines if the potential for risk exists; if based on a LOAEL (lowest observed adverse effect level) a MOE of <1,000 indicates the potential for human health risk exists and if based on a NOAEL (no observed adverse effect level) a MOE of <100 indicates the potential for risk exists.

Risk is a function of hazard and exposure and if the hazard concern level is low, then the risk will generally also be low. SHL003 has been predicted to have low overall human health cancer and non-concern hazard concerns. Based on this, the potential for risk to human health from exposure to the substance is also predicted to be low. It should be noted that SHL003 is predicted to cause irritation and/or sensitization, however, these effects are not used to quantify risk and proper PPE is indicated to mitigate any potential risks.

Overall, SHL003 is predicted to have low human health risk concerns, based low human health cancer and non-cancer hazard concern levels.

References

Previous PMNs for GS170, GS190, GS215 and GS250

(GTL USA 2016) Shell GTL Solvents GS1927 and GS2735 notification Expert human health hazard assessment support document, attachment to PMN with test results for similar GTL Solvents.